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## Hierarchical Self-Assembly of a Biomimetic Light-Harvesting Antenna Based on DNA G-Quadruplexes

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*Published in:*  
Chemistry

*DOI:*  
[10.1002/chem.201202550](https://doi.org/10.1002/chem.201202550)

**IMPORTANT NOTE:** You are advised to consult the publisher's version (publisher's PDF) if you wish to cite from it. Please check the document version below.

*Document Version*  
Publisher's PDF, also known as Version of record

*Publication date:*  
2013

[Link to publication in University of Groningen/UMCG research database](#)

### *Citation for published version (APA):*

Oltra, N. S., Browne, W. R., & Roelfes, G. (2013). Hierarchical Self-Assembly of a Biomimetic Light-Harvesting Antenna Based on DNA G-Quadruplexes. *Chemistry*, 19(7), 2457-2461.  
<https://doi.org/10.1002/chem.201202550>

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# **CHEMISTRY**

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## **A EUROPEAN JOURNAL**

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### Supporting Information

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#### **Hierarchical Self-Assembly of a Biomimetic Light-Harvesting Antenna Based on DNA G-Quadruplexes**

**Núria Sancho Oltra, Wesley R. Browne,\* and Gerard Roelfes\*<sup>[a]</sup>**

chem\_201202550\_sm\_miscellaneous\_information.pdf

### Calculation of the Förster radius.

The Förster radius was calculated in Å using the formula:

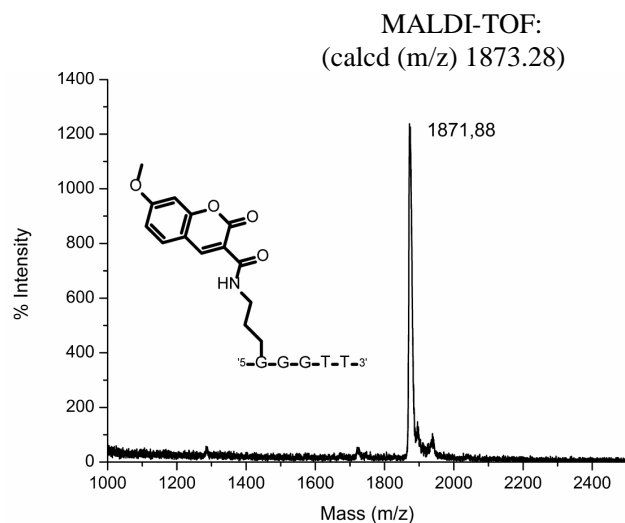
$$R_0^6 = 0.211 \cdot \left( QY_f \cdot J(\lambda) \cdot \frac{\kappa^2}{n^4} \right)$$

Where  $QY_f$  is the quantum yield of fluorescence of the donor in the absence of the acceptor,  $n$  is the refractive index of the solvent and  $\kappa^2$  is the orientation between the dipoles of the chromophores. When the orientation is not known a value of  $2/3$  is used, which means that the relative orientation averaged over all donor-acceptor pairs is assumed to be random.  $J(\lambda)$  is the overlap integral which is calculated using the emission spectrum of the donor chromophore, normalized to unit area, and the absorption spectrum of the accepting chromophore:

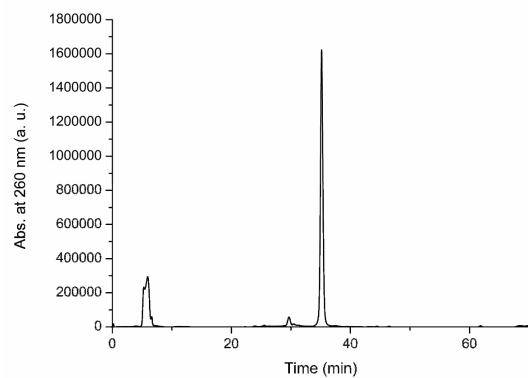
$$J(\lambda) = \int_0^\infty f_D(\lambda) \cdot \epsilon_A(\lambda) \cdot \lambda^4 d\lambda$$

Where  $f_D(\lambda)$  is the overlap of the donor fluorescence spectrum expressed in units of  $M^{-1}cm^{-1}(nm)^4$ ,  $\epsilon_A(\lambda)$  is the acceptor absorption spectrum expressed in units of  $M^{-1}cm^{-1}$  and  $\lambda$  in nm.

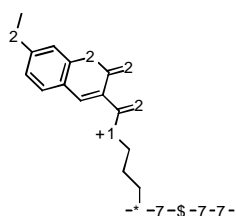
### Characterization of oligonucleotide conjugates.



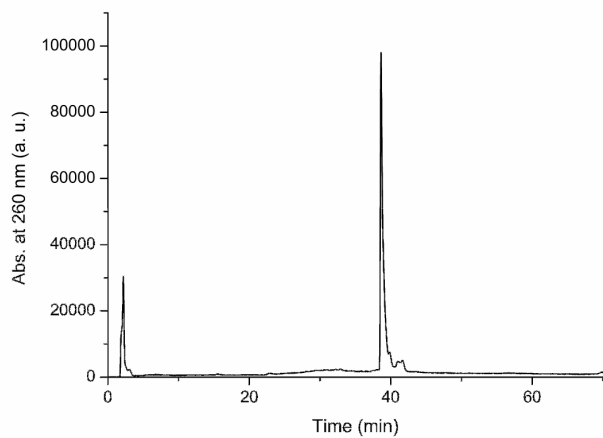
Rp-HPLC:



ESI (m/z) = 1873.4 (calcd 1873.28)



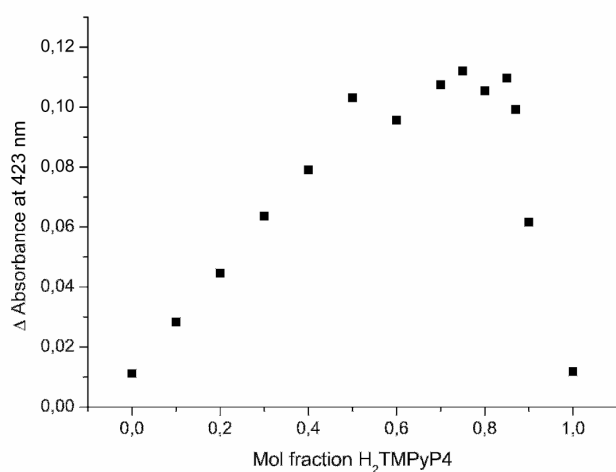
Rp-HPLC:



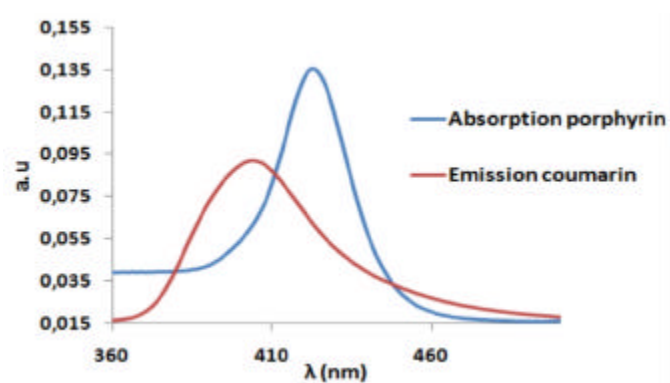
ESI (m/z) = 1831.60 (calcd 1832.26)

#### Titration G-quadruplex – H<sub>2</sub>TMPyP4

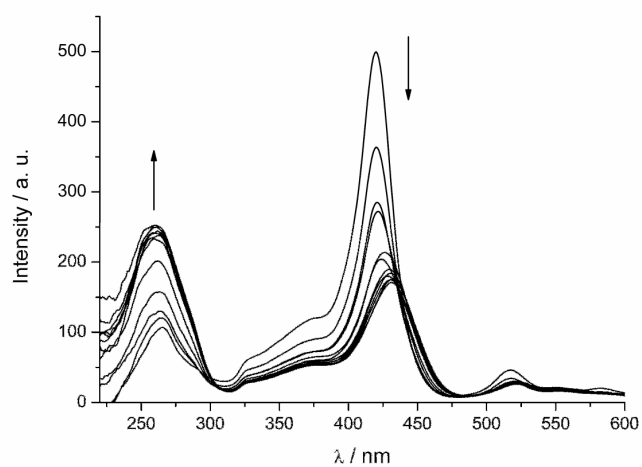
1 mL of a solution 0.8  $\mu$ M of H<sub>2</sub>TMPyP4 in 10 mM Tris-HCl, 80 mM KCl, pH 7.3 buffer was titrated with increasing amounts of quadruplex from a 6.14  $\mu$ M stock solution in the same buffer.



**Figure S1.** Job plot for the binding of  $H_2TMPyP4$  to  $*d(G_3T_2)_4$



**Figure S2.** Overlap between the emission spectrum of the coumarin and the absorption spectrum of the porphyrin.



**Figure S3.** Excitation spectra (at  $\lambda_{em} = 671$  nm) of  $H_2TMPyP4$  in a KCl buffer in the presence of increasing amounts (0-2.3 eq.) of amino-modified quadruplex  $d(G_3T_2)_4$ .